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09/486,779	03/02/2000	ALEX Q. HUANG	01640052AA	2967

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EXAMINER
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LOKE, STEVEN HO YIN

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/486,779

Applicant(s)

HUANG, ALEX Q.

Examiner

Steven Loke

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AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9, 19-32 and 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 19-32 and 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

1. Claims 1, 22, 24, 31, 32 and 38 are objected to because of the following informalities: Claim 1, lines 21, 22, 24, the phrase "said emitter controlled thyristor device" has no antecedent basis. Claim 22, lines 2-3, the phrase "said first and second discrete semiconductor switches" has no antecedent basis. Claim 24, line 7, the phrase "said MOS transistors" has no antecedent basis. Claim 31, lines 5, 8, the phrase "said MOS transistors" has no antecedent basis. Claim 32, line 4, the phrase "said gate" has no antecedent basis. Claim 32, lines 6-7, the phrase "said MOS switching device" has no antecedent basis. Claim 32, lines 7-8, the phrase "said second terminal of said MOS transistor" has no antecedent basis. Claim 38, lines 22-23, the phrase "said first discrete electronic switch", line 25, the phrase "said first electronic switch", lines 25-26, the phrase "said emitter turn-off thyristor" have no antecedent basis. Appropriate correction is required.

2. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification (page 2, line 22) discloses an emitter-controlled thyristor (ECT) is a monolithic device. Figs. 1A-8A show the ECT and its related devices in the monolithic form. However, the specification never discloses an emitter controlled thyristor (ECT) device package comprising: a first discrete MOS transistor connected in series with the thyristor between the cathode terminal and the thyristor emitter; and a second discrete

MOS transistor connected between the cathode terminal and the thyristor gate, a gate terminal of the second MOS transistor connected to the cathode terminal as claimed in claim 1. The specification (page 21, lines 6-8, and figs. 9-14 and 17-19) only discloses an emitter turn-off (ETO) thyristor device package comprising discrete devices.

The specification discloses an ECT comprising a floating ohmic contact [12] in fig. 1A. The specification never discloses an ECT device package comprising a floating ohmic contact as claimed in claim 2.

The specification discloses an ECT comprising a metal strap [12] in figs. 1A and 1C. The specification never discloses an ECT device package comprising a metal strap as claimed in claims 3 and 8.

The specification only discloses an emitter turn-off (ETO) thyristor package with a GTO thyristor and first and second MOS discrete transistors in figs. 13A, 13B, 14A, 14B, and 17A-17D. The specification (figs. 1C, 1D, 4A, 4B) also discloses a third MOS transistor in an ECT. The specification never discloses an ECT device package comprising a third MOS transistor as claimed in claims 4, 6 and 7.

The specification only discloses an emitter turn-off (ETO) thyristor package with a GTO thyristor, a first discrete PMOS transistor [236] and a second discrete PMOS transistor [234] in figs. 14A, 14B and 17A-17D. The specification (figs. 1C, 1D) also discloses a first PMOS transistor [10] and a second PMOS transistor [20] in an ECT. The specification never discloses an ECT device package comprising the first MOS transistor comprises a PMOS transistor and the second MOS transistor comprises a PMOS transistor as claimed in claim 5.

The specification only discloses an emitter turn-off (ETO) thyristor package with a GTO thyristor, a discrete NMOS transistor and a discrete PMOS transistor in figs. 17A-17D. The specification (figs. 2A, 2B) also discloses a diode connected between the gate of the first MOS transistor [32] and the thyristor emitter in an ECT. The specification never discloses an ECT device package comprising a diode connected between the gate of the first MOS transistor and the thyristor emitter as claimed in claim 9.

3. Claims 19-32 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The specification (page 20, line 28 to page 21, line 27 and figs. 17A-17D) discloses an emitter turn-off (ETO) thyristor device package comprising: first, second and third copper plates; a clamp means; a packaged GTO thyristor; and complementary first and second discrete MOS transistors. Therefore, it is unclear why claims 19-22 discloses a GTO device package comprising: first, second and third copper plates; a clamp means; a packaged GTO thyristor; and complementary first and second discrete MOS transistors. It is believed that an emitter turn-off (ETO) thyristor device package comprising: first, second and third copper plates; a clamp means; a packaged GTO thyristor; and complementary first and second discrete MOS transistors as claimed in claims 19-22.

The specification (page 20, line 28 to page 21, line 27 and figs. 17A-17D) discloses an emitter turn-off (ETO) thyristor device package comprising: a GTO thyristor, a first

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plurality of discrete switching devices and a second plurality of discrete switching devices. Therefore, it is unclear why claim 23 discloses a GTO device package comprising: a GTO thyristor, a first plurality of discrete switching devices and a second plurality of discrete switching devices. It is believed that an emitter turn-off (ETO) thyristor device package comprising: a GTO thyristor, a first plurality of discrete switching devices and a second plurality of discrete switching devices as claimed in claim 23. It is also believed that the structure limitations of claims 24-32 are directed to an ETO thyristor device package instead of a GTO device package.

Claim 23, lines 8-9, the phrase "a first terminal of said discrete switching devices" is unclear whether it is being referred to "a first terminal of each of said first plurality of discrete switching devices"; lines 10-11, the phrase "a second terminal of said discrete switching devices" is unclear whether it is being referred to "a second terminal of each of said first plurality of discrete switching devices"; lines 15-16, the phrase "a first terminal of said switching devices" is unclear whether it is being referred to "a first terminal of each of said second plurality of discrete switching devices"; line 17, the phrase "a second terminal of said switching devices" is unclear whether it is being referred to "a second terminal of each of said second plurality of discrete switching devices"; lines 20-21, the phrase "a gate terminal of said first plurality of switching devices" is unclear whether it is being referred to "a gate terminal of each of said first plurality of discrete switching devices"; lines 24-25, the phrase "said gate of said first plurality of switching devices" is unclear whether it is being referred to "said gate terminal of each of said first plurality of discrete switching devices".

Claim 24, lines 7-8, the phrase "said switching devices" is unclear whether it is being referred to the first or second plurality of discrete switching devices.

Claim 26, lines 2-3, the phrase "said discrete switching devices" is unclear whether it is being referred to the second plurality of discrete switching devices.

Claim 27, line 3, claim 28, line 3, claim 29, line 3, claim 30, line 3, the phrase "said switching devices" is unclear whether it is being referred to each of said second plurality of discrete switching devices.

Claim 32, lines 2-3, the phrase "said first switching devices" is unclear whether it is being referred to "each of said first plurality of discrete switching devices".

Claim 38, lines 15-19, the phrase "means for... switch or for injecting electrons..." is unclear whether it is being referred to "means for... switch for injecting electrons...".

4. Applicant's arguments with respect to claims 2-9 and 22-25, 31, 32 have been considered but are moot in view of the new ground(s) of rejection or objection.

5. Applicant's arguments filed 8/22/03 have been fully considered but they are not persuasive.

It is urged, in page 13 of the remarks, that a particular element recited by one term has been further defined as a particular type of element with a second term and it is irrelevant which of those terms is used for further reference to the element. However, the parent claim of claims 26-30 discloses first and second plurality of discrete switching devices. Therefore, it is necessary for dependent claims 26-30 to define the type of switching devices in the claims.

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6. Claims 19-32 and 38 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (703) 308-4920. The examiner can normally be reached on 7:50 am to 5:20 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

sl  
November 20, 2003

Steven Loke  
Principal Examiner